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EXAMINER

NGUYEN, CAM N

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 12/19/2001

5

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/601,788

Applicant(s)

Koyama et al.

Examiner

Cam Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Aug 8, 2000
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☒ All b) ☐ Some\* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892) 18) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) ☐ Notice of Informal Patent Application (PTO-152)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3 20) ☐ Other:

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## DETAILED ACTION

### *Claim Objections*

1. Claims 1-2, 4-5, 9, & 12 are objected to because of the following informalities:
  - A. In claim 1, line 3, "wherein" should be --having a--.
  - B. In claim 1, line 5, -- a -- should be inserted before "pore volume".
  - C. In claim 1, line 7, -- a -- should be inserted before "pore volume".
  - D. In claim 2, line 2, -- the -- should be inserted before "pore volume".
  - E. In claim 4, line 2, -- a -- should be inserted before "pore volume".
  - F. In claim 5, line 2, correct unit for density is --g/cm<sup>3</sup>--
  - G. In claim 9, line 3, -- of -- should be inserted before "fresh".
  - H. In claim 12, line 5, "cm<sup>3</sup> g/" should be --cm<sup>3</sup>/g--.
  - I. In claim 12, line 6, "an mean" should be -- a mean--.
  - J. In claim 12, last line, "the kneaded product after calcining" should be --a calcined kneaded product--.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 112 (Second Paragraph)*

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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3. Claims 6 & 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A. Claim 6 recites the limitation "the hydrogenation active metal components" in line 3.

There is insufficient antecedent basis for this limitation in the claim. It appears that claim 1 recites a catalyst containing only one hydrogenation active metal component, and claim 6 recites "components", which lacks of antecedent basis in the claim.

B. Claim 9 recites the limitation "the effective amount of metal deposition" in line 2. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-11 are rejected under 35 U.S.C. 103(a) as unpatentable over Simpson (U.S. Pat. 4,879,265).

Simpson discloses a catalyst composition for demetallization of residuum feedstock, comprising about 3 to about 17 wt.% of molybdenum, up to 4 wt.% of phosphorus, and up to 3 wt.% of cobalt or nickel, and having a pore volume of about 0.4 to about 1.5 cc/g, a pore size

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distribution of at least 5% of the total pore volume in pores of diameter greater than 100 angstroms (100 angstroms is equivalent to 10 nm), and a highly preferred catalyst having a mode pore diameter from about 135 angstroms (135 angstroms is equivalent to 13.5 nm) to about 165 angstroms (165 angstroms is equivalent to 16.5 nm) (see col. 8, ln 43-64).

With respect to the instantly claimed <sup>median</sup> pore diameter (which is determined by the nitrogen adsorption method), Simpson discloses a pore diameter, but does not indicate whether this pore diameter is a median pore diameter as applicants claiming. However, it is *prima facie obvious* to one of ordinary skill in the art that the median pore diameter of the pore diameter disclosed by Simpson would fall within the claimed range because Simpson teaches a mode pore diameter ranging from about 13.5 nm to 16.5 nm (see col. 8, ln 43-64), which falls within the claimed range.

The instantly claimed pore volume (which is determined by the nitrogen adsorption) is met by the teaching of the reference because Simpson teaches a catalyst having a pore volume of about 0.4 to about 1.5 cc/g, which encompasses the claimed pore volume of 0.56 cm<sup>3</sup>/g or greater.

Regarding claims 1, 2, & 4, with respect to the limitation on the pore volume (which is determined by the mercury intrusion porosimetry method). Simpson discloses that the total pore volume of the amorphous support, as measured by mercury porosimetry methods, is usually from about 0.2 to 2.0 cc/g (see col. 6, ln 41-43), the amorphous support particles may be essentially any pore size distribution over a range of pore diameters as small as about 25 angstroms (which is

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equivalent to 2.5 nm) to as large as about 10,000 angstroms (which is equivalent to 1000 nm), and that selection of a particular pore size distribution of the support particles depends in large part on the particular hydroprocessing reaction that is to be promoted by the final catalyst (see col. 6, ln 41-53). It is considered that the claimed limitation "pore volume of pores having a pore diameter of 50 nm or larger determined by the mercury intrusion porosimetry method being 0.32 cm<sup>3</sup>/g or greater" is met by the teaching as suggested in the reference, because a pore volume is taught to be ranging from about 0.2 to 2.0 cc/g (see col. 6, ln 41-43), which includes the claimed pore volume of 0.32 cm<sup>3</sup>/g or greater, and the pore diameters of selected support material can be ranging from about 2.5 nm to about 1000 nm (see col. 6, ln 41-53), which includes the claimed pore diameter of 50 nm or greater. The pore volume and pore diameter claimed in claim 4 are also met by the reference because they are overlapping with the disclosed range.

Regarding claim 5, Simpson is silent with respect to the claimed bulk density. However, it is considered that the catalyst as disclosed would possess the same bulk density in view of the same pore volume and pore diameter disclosed by Simpson and applicants.

Regarding claims 6 & 7, the instantly claimed molybdenum, cobalt, and phosphorus amounts are met by the reference since fall within the disclosed range (see col. 8, ln 43-64).

Regarding claim 8, in view of the teaching at col. 5, ln 61- col. 6, ln 32, the catalyst is taught to be made by extrusion molding.

Regarding claim 9, it is considered that the claim is met because both applicants and Simpson disclose a catalyst containing the same catalytic components in the same amounts.

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Regarding the intended use limitations “used in demetallizing or deasphalting of heavy oil” (in claim 3, lines 2-3), “for demetallization treatment of heavy oil containing 45 ppm by weight or more of nickel or vanadium with respect to metal weight” (in claim 10, lines 2-4), and “for deasphalting treatment of heavy oil containing 3% or more asphaltene component” (in claim 11, lines 2-3), it is noted that this is merely a recitation of the intended use of the claimed catalyst, and that the claimed catalyst does not depend on this recitation for completeness, but instead the limitations of the catalyst are able to stand alone; see MPEP. 2111.02 and 2114. See also *In re Pearson*, 181 USPQ 641 & *In re Thrau*, 57 USPQ 324.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson (U.S. Pat. 4,879,265).

Simpson discloses a process of preparing a catalyst by impregnating the catalytically active metal components with any porous amorphous refractory support particles including gamma alumina (see col. 5, ln 42-51). The support is having a particle size of less than about 100 microns (see col. 5, ln 67- col. 6, ln 1). The total pore volume of the amorphous support is usually from about 0.2 to 2.0 cc/g (see col. 6, ln 41-43). The extruded particles are taught to be having a cross-sectional shape (see col. 6, ln 13-33), thus suggests molding of the support particles. In view of the teaching at col. 6, ln 3-12, the support particles in the form of alumina gel is heat treated to convert into gamma alumina, thus suggests calcining. Simpson further discloses impregnating the active metal components on the support particles to obtain a catalyst (see col. 6,

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ln 33-35). After impregnation, the support is dried and calcined to produce a catalyst containing active components (see col. 7, ln 25-27).

Simpson discloses a particle diameter of 100 microns, but does not indicate whether the disclosed diameter being a mean particle diameter as applicants claiming. However, it is *prima facie obvious* to one of ordinary skill in the art that the mean particle diameter of the support particles disclosed by Simpson would be within the claimed range (from 10 to 200  $\mu\text{m}$ ) since the disclosed particle diameter falls with the claimed range.

7. Claims 13 & 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simpson (U.S. Pat. 4,879,265), as applied to claim 12 above, and further in view of Asaoka et al., "hereinafter Asaoka", (U.S. Pat. 4,562,059).

Simpson discloses a process of preparing a catalyst as described above, except for the following difference.

Simpson does not specifically indicate in the reference that his gamma alumina is obtained by calcining the boehmite powder as applicants claiming. However, such gamma alumina as prepared is conventional and known by Asaoka, as a useful carrier having a large surface, excellent mechanical strength and ability of support catalytic metals uniformly on its surface (see Asaoka at col 1, ln 7-17).



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*Citations*

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Takase et al. (U.S Pat. 4,595,667), Antos (U.S Pat. 4,079,097), Antos (U.S Pat. 3,994,832), Simpson (U.S Pat. 5,403,806), Antos (U.S Pat. 4,212,769), Simpson (U.S Pat. 4,460,707), Mayer et al. (U.S Pat. 3,998,722), Simpson et al. (U.S Pat. 5,223,472), Schrepfer (U.S Pat. 3,617,522), & Noguchi et al. (U.S Pat. 4,200,552) are cited for related art.

*Conclusion*

9. Claims 1-14 are pending. Claims 1-14 are rejected. No claims are allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Cam Nguyen, whose telephone number is (703) 305-3923. The examiner can normally be reached on M-F from 8:30 am. to 6:00 pm, with alternative Monday off.

The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310 (before finals) and (703) 872-9311 (after-final).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Nguyen/cnn

December 16, 2001

  
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